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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/731,385

12/09/2003

Tae-Sik Oh

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CHRISTIE, PARKER & HALE, LLP
PO BOX 7068
PASADENA, CA 91109-7068

EXAMINER

ROY, SIKHA

ART UNIT

PAPER NUMBER

2879

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/731,385

Applicant(s)

OH, TAE-SIK

Examiner

Sikha Roy

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-8, 16-18 and 23-25 is/are allowed.
- 6) ☒ Claim(s) 9-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 26, 2007 has been entered.

Cancellation of claims 19 and 20 has been entered.

Claims 1-18 and 23-25 are pending in the instant application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 11, 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,965,978 to Kishino et al.

Regarding claim 9 Kishino discloses (Fig. 3 column 4 lines 9-40, column 5 lines 1-11) a first substrate 3 and a second substrate 2 opposing one another with a predetermined gap there between, the first substrate and second substrate being

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sealed using a sealant (low melting point glass hermetically bonding substrates 2,3) thus forming a vacuum assembly, an electron emission assembly formed on the first substrate and emitting electrons by generation of electric fields within the electron emission assembly, an illumination assembly formed on the second substrate and realizing a display of images by electrons emitted from the electron assembly, wherein the illumination assembly includes a phosphor screen formed on the surface of the second substrate, a metal layer 6 formed on the phosphor screen within the vacuum assembly and an anode input terminal 6a formed (Kishino discloses the anode terminal or electrode can be formed as a part of metal backed layer or formed differently from the metal backed layer column 2 lines 10-17) extending from within the vacuum assembly to outside the sealant in which the end of the anode input terminal 6a within the vacuum assembly contacts the metal layer 6 to be electrically connected to the metal layer and an anode voltage is applied to a portion of the anode input terminal through the lead 28 extending beyond the sealant.

Kishino discloses the claimed invention except the anode terminal contacting the phosphor screen. It would have been an obvious matter of design choice to have the anode input terminal contacting the phosphor screen since the applicant has not disclosed that this configuration of the anode terminal solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the anode input terminal contacts the metal layer within the vacuum assembly as as disclosed by Kishino.

Regarding claim 11 Kishino discloses the claimed invention except the metal layer covering a portion of the anode input terminal. It would have been an obvious matter of design choice to have the metal layer covering a part of the anode input terminal since the applicant has not disclosed that this configuration of the metal layer solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the metal layer connected to the anode input terminal as disclosed by Kishino.

Regarding claim 12 Kishino discloses (Fig.1b column 4 lines 50-67) the electron emission assembly includes electron sources 15 and electrodes for inducing emission and wherein the electrodes include cathode electrodes 11 and the gate electrodes 13, being insulated from each other by an insulation layer and formed in a stripe pattern, the cathode electrodes being perpendicular to the gate.

Regarding claim 15 Kishino discloses the cathode electrodes formed on the first substrate 3, the insulation layer 12 formed on the first substrate covering the cathode electrodes, the gate electrodes 13 formed on the insulation layer, the insulation layer and the gate electrodes having openings for exposing the cathode electrodes and the electron emission sources 15 being formed in the openings on the exposed cathode electrodes.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,965,978 to Kishino et al. and further in view of U.S. Patent 6,410,101 to Jaskie et al.

Regarding claim 10 Kishino does not disclose the anode input terminal formed of material selected from a group consisting of indium tin oxide, Ni or Cr.

Jaskie discloses (column 2 lines 24, 25) the anode input terminal integrally formed with the transparent conductive layer formed of indium tin oxide. It is to be noted that this configuration provides simple manufacturing of the anode input terminal.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the anode input terminal of Kishino with a transparent conductive layer and the input terminal made of indium tin oxide as taught by Jaskie for providing simple manufacturing of the display device.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,965,978 to Kishino et al. and further in view of U.S. Patent 6,900,066 to Toyota et al.

Regarding claim 13 Kishino is silent about the electron emission sources made of carbon nanotube, graphite, diamond or combination of these materials.

Toyota in analogous art of field emission devices discloses (column 20 lines 13-25) the electron emission materials formed from carbon and diamond. Toyota teaches these material have large secondary electron gain and thus would enhance the field emission display.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to specify the electron emission sources of Kishino made of carbon and diamond as taught by Toyota for providing large secondary electron gain.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,965,978 to Kishino et al. and further in view of U.S. Patent 5,726,530 to Peng.

Regarding claim 14 Kishino does not disclose the gate electrodes being formed on the first substrate and the insulation layer being formed on the first substrate covering the gate electrodes.

Peng in the same field of endeavor discloses an FED comprising a substrate, a plurality of gate electrodes formed on the substrate, an insulation layer covering the gate electrodes, and a plurality of cathode electrodes over the insulating layer, and teaches this embodiment to be preferred over an FED wherein the cathode electrodes are disposed over the substrate, because the former provides a display whose resolution is not limited by the provision of individual ballast resistors for each pixel, said ballast resistors having high reliability, being capable of meeting tight tolerance, and controlling the emission current of each pixel', and further the chances of short circuiting the display and its detrimental effects are reduced (see Col. 1, lines 43-60; Col. 2, lines 47-59; and Figs. 3A, 4A, 6A, 7A and 8A).

Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to provide a plurality of gate electrodes on the first substrate and insulation layer covering the gate electrodes and a plurality of cathode electrodes over the

insulating layer as taught by Peng for the field emission device of Kishino for providing a display whose resolution is not limited by the provision of individual ballast resistors for each pixel, said ballast resistors having high reliability, being capable of meeting tight tolerance, and controlling the emission current of each pixel, and further the chances of short circuiting the display and its detrimental effects are reduced.

Allowable Subject Matter

Claims 1-8, 16-18 and 23-25 are allowed over the prior art of record.

Regarding claims 1, 16 and 23 the prior art of record neither teaches nor suggests a field emission display having all the limitations as claimed and particularly the limitation comprising a transparent conductive layer of the illumination assembly having a portion extending beyond the sealant as anode input terminal to which an anode voltage is applied.

Claims 2-8 are allowed for the same reason as of claim 1 because of their dependency status from claim 1.

Claims 17-18 are allowed for the same reason as of claim 16 because of their dependency status from claim 16.

Claims 24-25 are allowed for the same reason as of claim 23 because of their dependency status from claim 23.

Response to Arguments

Applicant's arguments, see Remarks, filed April 26, 2007, with respect to claims 1-8, 16-18, 23-25 have been fully considered and are persuasive. The rejection of these claims has been withdrawn.

Applicant's arguments with respect to claims 9-15 have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (571) 272-2463. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sikha Roy

Sikha Roy
Primary Examiner
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